

Claims

We claim:

- 5 1. A method of providing a mobile data device in a wireless system with information about preferred networks to connect to, said mobile data device having a preferred roaming list with a list of networks, said method comprising the steps of:
 - including information in the preferred roaming list about data capabilities of
10 each network; and
 - determining preferred networks based on information within said preferred roaming list including a geographic area and the data capabilities of said network.
- 15 2. The method of claim 1, wherein said data capabilities includes information about whether each said network in said list of networks supports third generation data capabilities and said determining step prefers those of said networks that support third generation data capabilities over those of said networks which do not support third generation data capabilities.
- 20 3. The method of claim 1, wherein said data capabilities includes information about whether each said network in said list of networks supports data roaming and said determining step prefers those of said networks that support data roaming over those of said networks which do not support data roaming.
- 25 4. The method of claim 1, wherein said data capabilities includes information about whether each said network in said list of networks supports mobile IP service and said determining step prefers those of said networks that support mobile IP service over those of said networks which do not support mobile IP
30 service.

5. The method of claim 1, wherein said data capabilities includes information about whether each said network in said list of networks supports an always-on feature and said determining step prefers those of said networks that support the always-on feature over those of said networks which do not support the always-on feature.

6. The method of claim 1, further comprising the steps of:
including information in said preferred roaming list about the device service capability of said mobile data device; and
restricting service requests from said mobile data device based on the device service capability of said device.

7. The method of claim 6, wherein said device service capability information includes whether the device supports data service.

8. The method of claim 6, wherein said device service capability information includes whether the device supports voice service.

9. The method of claim 6, wherein said device service capability information includes whether the device supports SMS.

10. The method of claim 6, wherein said device service capability information includes whether the device supports a browser.

11. A method of providing a mobile data device in a wireless system with information about preferred networks to connect to, said mobile data device having a preferred roaming list with a list of networks, said method comprising the steps of:

including information in the preferred roaming list about whether each said network in said list of networks supports third generation data capabilities; and

determining preferred networks based on information within said preferred roaming list including a geographic area and whether said network supports third generation data capabilities

whereby, within said geographic area, said mobile data device prefers those of
5 said networks which support third generation data capabilities over said networks which do not support third generation data capabilities.

12. The method of claim 11 further comprising the steps of:

including information in the preferred roaming list about whether each said
10 network in said list of networks supports data roaming; and
further determining preferred networks based on whether said network supports data roaming

whereby said mobile data device further prefers those of said networks which support said data roaming over networks which do not support said data
15 roaming.

13. The method of claim 12 further comprising the steps of:

including in the preferred roaming list information about whether each
20 said network in said list of networks supports Mobile IP service; and
further determining preferred networks based on whether said network supports said Mobile IP service

whereby said mobile device further prefers those of said networks which support said Mobile IP service over networks which do not support said Mobile IP
25 service.

14. The method of claim 13 further comprising the steps of:

including in the preferred roaming list information about whether each said
network in said list of networks supports an always-on feature; and
30 further determining preferred networks based on whether said network supports said always-on feature

whereby said mobile device further prefers those of said networks which support said always-on feature over networks which do not support said always-on feature.

- 5 15. The method of claim 14, wherein said method further comprises the steps of
including information in said preferred roaming list about the device
service capability of said mobile data device; and
restricting service requests from said mobile data device based on the
device service capability of said device.

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16. The method of claim 15, wherein said device service capability information includes whether the device supports data service.

- 15 17. The method of claim 16, wherein said device service capability information includes whether the device supports voice service.

18. The method of claim 17, wherein said device service capability information includes whether the device supports SMS.

- 20 19. The method of claim 18, wherein said device service capability information includes whether the device supports a browser.

20. A method of providing a mobile data device in a wireless system with information about preferred networks to connect to, said mobile data device
25 having a preferred roaming list with a list of networks, said method comprising the steps of:

- Including in the preferred roaming list information about whether each said network in said list of networks supports third generation data capabilities;
Including in the preferred roaming list information about whether each said
30 network in said list of networks supports data roaming;

Including in the preferred roaming list information about whether each said network in said list of networks supports Mobile IP service;

Including in the preferred roaming list information about whether each said network in said list of networks supports an always-on feature; and

5 determining preferred networks based on information within said preferred roaming list including a geographic area and whether said network supports third generation data capabilities, data roaming, Mobile IP service and always-on feature;

whereby, within said geographic area, said mobile data device firstly prefers

10 those of said networks which support said third generation data capabilities over networks which do not support said third generation data capabilities, secondly prefers those of said networks which support said data roaming over networks which do not support said data roaming, thirdly prefers those of said networks which support said Mobile IP service over networks which do not support said
15 Mobile IP service, and fourthly prefers those of said networks which support said always-on feature over networks which do not support said always-on feature.

21. A system for providing a mobile data device in a wireless system with information about preferred networks to connect to from a list of networks, said

20 system comprising:

the mobile data device, said mobile data device being capable of connecting to some or all networks within said list of networks; and a preferred roaming list within said mobile data device, said preferred roaming list including:

25 identification information for each network within said list of networks;

geographic information for each network within said list of networks;
and

information about each network within said list of networks
30 indicating whether each network supports data capability;

whereby said mobile data device chooses a preferred network based on said geographic information and those of said networks within said list of networks that supports said data capability.

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22. The system of claim 21, wherein said data capability information includes whether each said network supports third generation data capability.

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23. The system of claim 22, wherein said data capability information includes whether each said network supports data roaming.

24. The system of claim 23, wherein said data capability information includes whether each said network supports Mobile IP services.

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25. The system of claim 24, wherein said data capability information includes whether each said network supports an always-on feature.

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26. The system of claim 25, wherein said preferred roaming list further includes:
information about service capabilities of the mobile data device to indicate
which services the mobile data device supports,
whereby said mobile data device is restricted from requesting services the
mobile data device supports.

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27. A method for a mobile device to acquire a system comprising the steps of:
waiting until a new system needs to be acquired;
starting a search for a new system;
when a new system is acquired, checking said new system against a PRL
table to see if said new system supports third generation data capabilities;
if said new system does not support third generation data capabilities,
checking whether any system supports third generation data capabilities, and if
so performing said starting and checking steps again; and

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if said new system does support third generation data capabilities,
acquiring said new system.

28. The method of claim 27, further comprising the step of:

5 determining whether said new system is the best system if said new
system supports third generation data capabilities, and if yes, acquiring said new
system, and if no, performing said starting and checking steps again.